State of New Jersey

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October 12, 2021

Submitted to the Pennsylvania online comment system at:
http://www.ahs.dep.pa.gov/eComment
Also, via email at: RegComments@pa.gov

RE: Proposed Revisions to Pennsylvania Rules Concerning Reasonably Available Control Technology (RACT) Requirements for the 70 parts per billion 2015 Ozone Standard

Dear Sir/Madam:

The New Jersey Department of Environmental Protection (NJDEP) appreciates the opportunity to provide comments on the Pennsylvania Environmental Quality Board proposed rules concerning implementation of RACT requirements for the 70 parts per billion (ppb) 2015 ozone National Ambient Air Quality Standard (NAAQS). The rule proposal was published in the August 7, 2021 Pennsylvania Bulletin.

NJDEP recognizes the Pennsylvania Department of Environmental Protection (PADEP) efforts to implement RACT requirements. Emissions from major facilities located in Pennsylvania contribute significantly to the degradation of air quality in New Jersey and downwind states. New Jersey counties are located in two multi-state ozone nonattainment areas - southern New Jersey-Pennsylvania-Delaware-Maryland and northern New Jersey-New York-Connecticut. A total of 15 air quality monitors exceeded the 70-ppb standard in both areas based on the Environmental Protection Agency (EPA) 2020 ozone design values as shown in Table-1 (attached). For the nonattainment area that New Jersey shares with Pennsylvania around the Philadelphia metropolitan area, Pennsylvania's three monitors (one in Bucks County, and two in Philadelphia County) measured ozone above the 70-ppb standard.

PADEP and the Pennsylvania Board should consider the following recommendations to improve air quality in the region.

1. RACT Limits: Pennsylvania RACT standards are not as stringent as RACT standards promulgated by New Jersey almost a decade ago. New Jersey's RACT standards for nitrogen oxides (NO_x) from boilers combusting coal or distillate oil, turbines combusting gas or oil, and engines combusting gaseous fuel are more stringent than Pennsylvania standards as shown in Table-2 (attached). New Jersey's existing sources are demonstrating compliance with New Jersey RACT limits with a significant margin. PADEP should adopt presumptive NO_x limits equivalent to New Jersey, Delaware, and Maryland. The New Jersey standards are codified in N.J.A.C. 7:27-19 "Control and Prohibition of Air Pollution from Oxides of Nitrogen", available at http://www.state.nj.us/dep/aqm/currentrules/Sub19.pdf.

   In addition to the less stringent RACT limits and as parametric monitors are less accurate, Pennsylvania RACT rule provision 129.115(b) allows combustion units not equipped with a continuous monitoring system (CEM) to demonstrate compliance with applicable RACT limits based on a 30-operating day rolling average. PADEP should require CEMs on existing emission sources, if possible. New Jersey RACT rule provisions N.J.A.C. 7:27-19.4(b) and 19.12(c) require CEMs on all boilers serving an electric generating unit and municipal solid waste incinerators.

2. Cost Effectiveness for NOx Controls:

   The proposed presumptive NOx RACT limits are based on a very low cost threshold of $3750/ton of NO_x removed. PADEP used EPA's Cross-State Air Pollution Rule (CSAPR) cost benchmark of $1,600 per ton of NOx reductions as a guide. (from Pennsylvania Technical Support Document, page 12). PADEP's RACT determinations based on this low cost effectiveness allows Pennsylvania's existing sources to emit significant amounts of NO_x, which makes it difficult for New Jersey and other neighboring states to attain the ozone NAAQS.

   One unique cost threshold for all sources is not suitable for several reasons. EPA defines RACT as *"the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility" (44 Fed. R. 53762, September 17, 1979).* The definition refers to a "a particular source" which implies a single absolute dollar per ton of air contaminant removed amount cannot be established for all analyses. The control costs vary with source categories. These costs are decreasing over a time because of the technological advances. NJDEP does not consider any unique cost benchmark for RACT analysis. During RACT rule development in 2008, NJDEP estimated an acceptable range of $5,000 to up to $57,500 per ton of NO_x removed for a facility-specific NO_x control plan or an alternative maximum allowable NO_x emission rate. (see economic impact section of New Jersey RACT rule proposal available at http://www.nj.gov/dep/rules/proposals/080408a.pdf). For High Electric Demand Day

(HEDD) boilers and turbines, New Jersey cost effectiveness ranges from $5,000 per ton to $40,000 per ton of NOx removed.

Pennsylvania and New Jersey are in the same geographic and regional economy. NJDEP recommends PADEP revise their proposed NOx limits using higher $/ton benchmarks so that their RACT levels are comparable to those utilized in New Jersey and Ozone Transport Region (OTR) states. PADEP should also use the RACT tool and associated cost-effectiveness levels that the Ozone Transport Commissions Stationery and Area Sources Committee (OTC SAS) RACT workgroup is developing to establish presumptive and case-by-case RACT determinations.

3. Coal Boilers: Large coal fired combustion units greater than 250 MMBTU per hour emit significant amounts of NOx and volatile organic compounds. PADEP proposed case-by-case RACT determinations for large coal boilers instead of setting a presumptive NOx RACT limit. In these case-by-case RACT determinations, PADEP should not use a low benchmark ($3,750/ton of NOx removed) to determine NOx control requirements as discussed in 2. above. PADEP should use the OTC SAS database for establishing NOx limits and averaging time while making case-by-case RACT determinations for large coal boilers. PADEP should also require full use and optimization of selective catalytic reduction (SCR) and other ozone season NOx controls and require CEMs to monitor daily average NOx emissions.

   The Mid-Atlantic/Northeast Visibility Union (MANE-VU), of which Pennsylvania is a member, has recognized the need to control and reduce emissions of NOx to ensure progress in visibility improvement for the second phase of Regional Haze planning (2018 -2028). MANE-VU members agreed to include a strategy in their Regional Haze State Implementation Plans that ensures that Electric Generating Units (EGUs) larger than or equal to 25 MW are operating existing NOx controls effectively on a year-round basis. In case-by-case RACT approvals for coal boilers, PADEP should require operations of NOx controls on a year-round basis. PADEP should also require measures to improve efficiency of NOx controls, such as increasing reagent (ammonia or urea) flow rate and increasing frequency of catalyst replacement, if feasible.

4. Municipal Waste Combustors: PADEP proposed a NOx limit of 150 ppmvd@7% oxygen, daily rolling average for existing municipal waste combustors (MWC). These units emit significant amount of NOx. Pennsylvania has 19 large units that emitted 3531 tons of NOx in 2018. PADEP should evaluate OTC SAS recommendations while establishing presumptive NOx limits. OTC SAS prepared the Municipal Waste Combustor Workgroup Report in June 2021 (available at 20210624 OTC SAS MWC report final.pdf (otcair.org)). The report (page 22) concluded that a control level of 105 ppm on a 30-day average

basis and 110 ppm on a 24-hour averaging period are likely achievable for most large MWCs in the region. Alternatively, PADEP may propose case-by-case RACT determinations for MWC units and use the OTC SAS RACT tool and associated cost-effectiveness thresholds.

5. Additional time for implementation of RACT limits: The proposed RACT rule limits would be applicable on and after January 1, 2023. The proposal allows one additional year (up to January 1, 2024). PADEP should not allow a one-year grace period.

If you have any questions regarding these comments, please contact Kenneth Ratzman, Assistant Director, at (609) 292-0834.

Sincerely,

Digitally signed by Francis C. Steitz
Date: 2021.10.12 10:48:02 -04'00'

Francis C. Steitz
Director
Division of Air Quality

Enclosure:

Paul Baldauf, Assistant Commissioner, Air Quality, Energy, and Sustainability
Kenneth Ratzman, Assistant Director

Table-1

2020 8-Hour Ozone Monitoring Data

AQS Code	State	Site Name	2018 4th high	2019 4th high	2020 4th high	2020 Design value(a)(b)
Three Monitors in Southern New Jersey-Pennsylvania-Delaware Ozone Nonattainment Area						
420170012	PA	Bucks (BRIS)	84	67	71	74
421010024	PA	Philadelphia (NEA)	79	71	70	73
421010048	PA	Philadelphia (NEW)	76	72	67	71
Twelve Monitors in Northern New Jersey-New York-Connecticut Ozone Nonattainment Area						
340030006	NJ	Leonia	79	71	66	72
361030002	NY	Babylon	74	72	69	71
361030009	NY	Holtsville	76	68	73	72
360050133	NY	Pfizer Lab	77	68	69	71
361192004	NY	White Plains	78	69	67	71
090090027	CT	Criscuolo Park	72	78	68	72
090011123	CT	Danbury (Western Conn Univ)	75	72	67	71
090010017	CT	Greenwich	86	84	77	82
090099002	CT	Madison (Hammonasset)	77	84	80	80
090070007	CT	Middletown	77	76	69	74
090013007	CT	Stratford	83	82	76	80
090019003	CT	Westport (Sherwood)	84	81	73	79

(a) A design value is an average 4th highest from past three years at each monitoring station. It is a statistic that describes the air quality status of a given location relative to the level of a standard (NAAQS) and used to designate and classify nonattainment areas, as well as to assess progress towards meeting the NAAQS. Design values are computed and published annually by EPA's Office of Air Quality Planning and Standards and reviewed in conjunction with the EPA Regional Offices. Please see Air Quality Design Values | US EPA for details.

(b) Please see Table 5- Site level design values for the 2015 8-Hour ozone NAAQS for EPA certified design values available at https://www.epa.gov/sites/default/files/2021-05/o3_designvalues_2018_2020_final_05_11_21.xlsx

Table-2

Comparison of Presumptive NOx RACT limits of Pennsylvania and New Jersey

Source and Fuel	Pennsylvania Proposed RACT Limits (25 Pa Code 121.1 and 129.111-129.115) On and after 1/1/2023	New Jersey Current RACT Limits (N.J.A.C. 7:27-19) On and after 5/1/2015
Boilers – Coal	0.45 Lb/MMBTU (a)	1.50 Lb/MWh (0.15 Lb/MMBTU) (c)
Boilers - Distillate oil	0.12 Lb/MMBTU (b)	1.00 Lb/MWh (0.10 Lb/MMBTU) (c)
Simple Cycle Turbines - Gas	85 ppmvd @15%O_2 (d)	1.00 Lb/MWh (25 ppmvd@15% O2) (e)
Simple Cycle Turbines – Oil	150 ppmvd @15%O_2 (f)	1.60 Lb/MWh (42 ppmvd@15% O2) (e)
Combined Cycle Turbines- Gas	42 ppmvd @15%O_2 (g)	0.75 Lb/MWh (25 ppmvd@15% O2) (e)
Combined Cycle Turbines- Oil	96 ppmvd @15%O_2 (h)	1.20 Lb/MWh (42 ppmvd@15% O2) (e)
Lean Burn Engines- Gas	3.0 grams/hp-hr (i)	1.5 grams/hp-hr (j)

(a) PA Section 129.112(g)(1)(v) and 129.115(b)(4), Boilers with heat input <250 MMBTU/Hr

(b) PA Section 129.112(g)(1)(ii) and 129.115(b)(4), Boilers with heat input >50 MMBTU/Hr

(c) For New Jersey HEDD boilers, N.J.A.C. 7:27-19.4(a), Table 3 sets forth maximum allowable emission rates of 1.50 Lb/MWh for coal and 1.00 Lb/MWh for No. 2 and lighter fuel oil. This output-based emission rate is based on a heat rate of 10,000 Btu/KW-hr and input-based emission limits of 0.15 Lb/MMBTU for coal and 0.10 Lb/MMBtu for No. 2 and lighter fuel oil.

(d) PA Section 129.112(g)(2), 85 ppmvd @15%O_2 (1000<BHP<3000), 42 ppmvd@15%O2(>3000 BHP)

(e) For New Jersey HEDD turbines, N.J.A.C. 7:27-19.5(g), Table 7, maximum allowable emission rates of 1.00 pound/MWh for natural gas-fired simple cycle turbines, 1.60 pounds/MWh for fuel oil-fired simple cycle turbines, 0.75 pounds/MWh for natural gas-fired combined cycle turbines, and 1.20 pounds/MWh for fuel oil-fired combined cycle turbines. These output-based emission rates are based on an input-based emission rate of 25 ppm (0.100 pounds/MMBtu) for natural gas combustion and 42 ppm (0.160 pounds/MMBtu) for fuel oil combustion and an efficiency of 35 percent for simple cycle turbines and 46 percent for combined cycle combustion turbines.

(f) PA Section 129.112(g)(2), 150 ppmvd@15%O_2 (1000<BHP<3000), 96 ppmvd @15%O_2 (>3000 BHP)

(g) PA Section 129.112(g)(2)(i)&(ii), 42 ppmvd @15%O2 (< 180 MW), 4 ppmvd @15%O2 (>180 MW)

(h) PA Section 129.112(g)(2)(i)&(ii), 96 ppmvd @15%O2 (< 180 MW), 8 ppmvd @15%O2 (>180 MW)

(i) PA Section 129.112(g)(3)(i)(A)

(j) N.J.A.C. 7:27-19.8, Table-10. 1.5 grams/hp-hr or an emission rate which is 80 percent NOx reduction from the uncontrolled NOx emission level.